

REMARKS

The present application was filed on July 21, 2003 with claims 1-18. Claims 1-18 are pending in the present application. In the outstanding Office Action dated October 18, 2004, which has been made final, the Examiner has: (i) objected to the drawings under 37 C.F.R. 1.83(a); (ii) rejected claims 1-18 under 35 U.S.C. § 112, second paragraph as being indefinite; and (iii) rejected claims 1-8 and 11-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,707,102 to Morikawa et al. (hereinafter "Morikawa").

In this response, claims 1 and 14 have been amended in order to clarify the correspondence between the subject claims and the drawings so as to address the Examiner's objection to the drawings. These amendments are believed to present the rejected claims in better form for consideration on appeal. It is respectfully submitted that no new matter has been introduced by the amendments made herein. Applicants respectfully request reconsideration of the present application in view of the above amendments and the following remarks.

The drawings have been objected to for failing to show every feature of the invention specified in the claims (final Office Action; page 2, first paragraph). In this regard, the Examiner contends that the element "the connection in an active layer area . . . must be shown or the feature(s) canceled from the claim(s)" (final Office Action; page 2, first paragraph). Applicants submit that the amendments to independent claims 1 and 14 set forth above are believed to define the connection arrangement between the shielding structure and the first source/drain region in such a manner as to address the Examiner's objection to the drawings.

Specifically, claims 1 and 14 have been amended to further clarify the connection between the shielding structure and the first source/drain region as "comprising a substantially vertical conductor formed in a region of the device overlying an active area of the device" (emphasis added), rather than in the active area itself, as the subject claims may have been previously interpreted. This feature of the claimed invention is clearly depicted at least in FIGS. 2 and 3H of the present application. Referring to the cross-sectional view of the device shown in FIG. 2, the active area is known by those skilled in the art to be an area of the device bounded by the source, drain and channel regions, as acknowledged by the Examiner (Office Action; page 3, first paragraph). Claims

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1 and 14, as amended, directly correspond to the drawings. Accordingly, Applicants respectfully request withdrawal of the objection to the drawings.

Claims 1-18 stand rejected under 35 U.S.C. §112, second paragraph as being indefinite. The Examiner contends that these claims omit essential structural cooperative relationships between elements, particularly relating to “the interconnection between the source/drain and said shield structure by way of a connection between the gate and the second source/drain region” (Office Action; page 3, first paragraph). Applicants respectfully assert, however, that the subject claims do not recite a connection between the gate and the second source/drain region as the Examiner contends. Instead, claims 1 and 14, as amended, specify that the shielding structure is electrically connected to the first source/drain region by way of “a connection formed in a region of the device overlying an active area of the device.” The “connection” recited in claims 1 and 14 is an element of the device which is intended to include all structures necessary to provide an electrical path between the shielding structure to the first source/drain region, an example of which includes conductive trace 232, contact vias 234, and conductive plug 236, shown in FIG. 2 of the drawings.

The shielding structure and its physical relation to other device elements is clearly illustrated in one or more of the figures. For example, with reference to FIG. 2 of the present application, an illustrative implementation of the shielding structure is shown as dummy gate 222. The term “dummy gate” as used throughout in the present specification is one example of the claimed shielding structure (*see, e.g.*, specification; page 6, line 25). Applicants submit that claims 1 and 14, as amended, properly define all essential structural cooperative relationships of the elements. Accordingly, withdrawal of the §112 rejection of claims 1-18 is respectfully solicited.

Claims 1-8 and 11-18 stand rejected under §103(a) as being unpatentable over Morikawa. Applicants note that claims 9 and 10 do not appear to have been rejected by the Examiner under §103(a) in the present Office Action, and thus will not be addressed herein. With regard to independent claims 1 and 14, which are of similar scope, the Examiner maintains the rejection set forth in the previous Office Action dated March 25, 2004, contending that it would have been obvious to one skilled in the art to conclude that the device taught by Morikawa is structurally similar to the device set forth in the subject claims (final Office Action; page 4, first paragraph). Applicants respectfully disagree with this contention and assert that the devices set forth in claims

1 and 14 are structurally distinguishable from the device taught or suggested by Morikawa, and as such provide benefits not achievable by the prior art of record. Specifically, claims 1 and 14, as amended, further define the shielding structure as being electrically connected to the first source/drain region “by way of a connection comprising a substantially vertical conductor formed in a region of the device overlying an active area of the device between the gate and the second source/drain region.” Support for this amendment can be found in the specification, for example, on page 12, lines 3-21, and in FIGS. 2, 3G and 3H. Applicants submit that the prior art of record fails to teach or suggest at least this feature of the claimed invention.

Morikawa, with reference to FIGS. 1 and 2, discloses a shield conductive film 10, which the Examiner analogizes to the shielding structure of the claimed invention, formed above an n-type semiconductor region 8, between a gate electrode 3 and a drain 9 of a MOSFET device. However, in contrast to the claimed invention, Morikawa discloses that the portion of the shield conductive film 10 which electrically connects to wiring 13 is not formed above an active area of the device, but instead is formed over a field oxide film 2 outside the active region of the device (Morikawa; FIG. 1). The wiring 13 constitutes a source electrode and electrically connects the source region 5 to the shield conductive film 10 (Morikawa; column 6, lines 5-9). Morikawa states, with reference to FIG. 1, that “wiring 13 is also electrically connected to the shield conductive film 10 via a contact hole 18, which is formed in the silicon oxide film 12 provided over the field oxide film 2 surrounding an active region L” (Morikawa; column 6, lines 10-14; FIG. 1; emphasis added). Morikawa thus teaches away from the connection arrangement of the claimed invention.

Although a portion of the wiring 13 in the Morikawa device, which the Examiner analogizes to the “connection” set forth in claims 1 and 14, may traverse a region above an active area of the device, Morikawa fails to disclose that the wiring 13 comprises “a substantially vertical conductor formed in a region of the device overlying an active area of the device between the gate and the second source/drain region,” as required by the claimed invention. Unlike the device configuration taught by Morikawa, because the connection between the shielding structure and the first source/drain region set forth in amended claims 1 and 14 comprises a substantially vertical conductor formed over the active area of the device, the connection itself provides additional beneficial gate shielding so as to improve an effectiveness of the shielding structure, without

increasing a capacitance between the gate and the second source/region, or between the gate and the first source/drain region. Since the shield conductive film 10 in Morikawa is electrically connected to the wiring 13 outside of the active region L of the device, the wiring provides essentially no additional shielding benefits to the device.

For at least the reasons given above, Applicants submit that claims 1 and 14, as amended, are patentable over the prior art of record. Accordingly, favorable reconsideration and allowance of claims 1 and 14 are respectfully requested.

With regard to claims 2-8 and 11-13, which depend from claim 1, and claims 15-18, which depend from claim 14, Applicants submit that these claims are also patentable at least by virtue of their dependency from their respective base claims. Moreover, one or more of these claims define additional patentable subject matter in their own right. For example, claims 11 and 13 further define the shielding structure as “comprising at least one conductive plug.” The prior art of record fails to teach or suggest at least this additional feature.

With regard to claims 11 and 13, the Examiner contends that “the interconnection of the shielding structure through a via signifies the claimed plug” (final Office Action; page 4, paragraph 4). Applicants respectfully disagree with the Examiner’s contention and submit that Morikawa provides no teaching or suggestion for forming a shielding structure including a conductive plug, as required by the subject claims. While Morikawa may disclose that the shield conductive film 10 is connected to the wiring 13 via a contact hole 18 (Morikawa; column 6, lines 9-11), such disclosure is not directed to the shield conductive film itself, which the Examiner analogizes with the shielding structure of the claimed invention. Instead, Morikawa clearly discloses that the shield conductive film 10 comprises a substantially planar n-type polysilicon film. Morikawa states that “[f]or the formation of the shield conductive film 10, an n-type polysilicon film having a thickness . . . smaller than the gate electrode 3 by a CVD method is deposited on the silicon film 11” (Morikawa; column 10, lines 7-11).

For at least the reasons set forth above, Applicants submit that claims 2-8, 11-13 and 15-18 are patentable over the prior art of record, not merely by virtue of their dependency from their respective base claims, but also in their own right. Accordingly, favorable reconsideration and allowance of claims 2-8, 11-13 and 15-18 are respectfully solicited.

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In view of the foregoing, Applicants believe that claims 1-18, which are currently pending in the application, are in condition for allowance, and respectfully request withdrawal of the §112 and §103 rejections.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Wayne L. Ellenbogen", with a stylized flourish at the end.

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